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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,038	05/25/2000	Tomoyoshi Yabe	PM 270700	6470

7590 02/25/2004

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WASHINGTON, DC 20005-2004

EXAMINER

KIBLER, VIRGINIA M

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 02/25/2004

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/578,038

Applicant(s)

YABE, TOMOYOSHI

Examiner

Virginia M Kibler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/12/04 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (JP 08-075666) in view of Chahal et al. (4,525,741), Bonewitz et al. (5,917,602) and Suzuki et al. (JP 09-160982).

Regarding claim 1, Uchida et al. ("Uchida") discloses a surface inspecting system including a line sensor 4 for one-dimensionally imaging an elongated work board 1 in lines perpendicular to the moving direction (Page 2, para 0012), a velocity-measuring means for measuring in real time the moving velocity of the work board on each data sampling position of the line sensor (Page 2, para. 0011), a sampling control means for controlling the image data sampling of the line sensor in the direction of board movement and on the basis of the moving

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velocity of the work board measured by the velocity means (Page 3, para. 0014), and an image-composing memory for forming a two-dimensional image of the work board (Page 2, para. 0012). Uchida does not appear to recognize the line sensor comprising two types of image data sampling means, one for an odd-number sampling line and the other for an even-number sampling line. However, Chahal et al. ("Chahal") teaches that it is known to provide a line sensor for one dimensional imaging comprising two types of image data sampling means, one for odd-number and the other for even-number sampling line and forming a two-dimensional image by sequentially combining the odd-line and even-line data (Col. 3, lines 60-65 and Col. 4, lines 1-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the data sampling of the line sensor and forming the two-dimensional image disclosed by Uchida to include odd-number and even-number sampling as taught by Chahal because it is routinely implemented in the art to provide the 2-D image needed for surface inspection. This procedure will expedite surface inspection by performing parallel processing of the captured image data. Uchida and Chahal do not recognize the velocity-measuring means measuring the rotational velocity of a transferring roller for transferring the board. However, Bonewitz et al. ("Bonewitz") teaches that it is known to measure the rotational velocity of a transferring roller 202 (Col. 9, lines 20-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the velocity-measuring means disclosed by Uchida and Chahal to include measuring the rotational velocity of a transferring roller, as taught by Bonewitz, because it will encompass translational and rotational velocity measurements in convey or systems that are traditionally comprised of different movement mechanisms. Uchida and Chahal do not appear to expressly state a plurality

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of manufacturing processes. However, Suzuki teaches that it is known for a work to pass through a plurality of manufacturing processes (Abstract, lines 1-6). Suzuki further teaches that it is known to provide a detecting means 29-34 for detecting the entry and exit of the work into and out of each manufacturing process (Pages 6 and 7, para. 0031-0040), a time-measuring means for measuring times when the entry and exit of the work board are detected by the detecting means (Page 6, para. 0038), and an identifying means for identifying the work based on a process number representing each manufacturing process, and on times of entry and exit of the work into and out of the process measured by the time-measuring means (Page 5, para. 0025-0027). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the inspection of the work boards disclosed by Uchida, Chahal, and Bonewitz to include the inspection through manufacturing processes as taught by Suzuki because it provides a continuous quality and process control of the work and will enhance the manufacturing conditions (Abstract).

4. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (JP 08-075666) in view of Chahal et al. (4,525,741), Bonewitz et al. (5,917,602) and Suzuki et al. (JP 09-160982) as applied to claim 1 above, and further in view of Michael et al. (6,421,458).

Regarding claim 3, Uchida, Chahal, Bonewitz, and Suzuki do not appear to recognize including a controlling means to correct the image data on the basis of the degree of slant. However, Michael et al. ("Michael") teaches that it is known to provide a controlling means 306 to correct the image data on the basis of the degree of slant (Col. 6, lines 24-39). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have

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modified the 2-D image disclosed by Uchida, Chahal, Bonewitz, and Suzuki to include a controlling means to correct the data on the basis of the degree of slant as taught by Michael because slant or skew correction is an essential procedure routinely implemented in image processing to increase system accuracy and reliability.

Regarding claim 11, the arguments analogous to those presented above for claim 3 are applicable to claim 11. Michael discloses the slant correction is accomplished by an affine transformation 310 (Figure 1B). While Michael does not expressly state the claimed equation, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the general affine transformation disclosed by Michael to explicitly state the claimed equation because it is a matter of design choice by incorporating the standard trigonometric equations such as calculating the cosine of an angle or using the arc cosine to identify the angle.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (JP 08-075666) in view of Chahal et al. (4,525,741), Bonewitz et al. (5,917,602) and Suzuki et al. (JP 09-160982) as applied to claim 1 above, and further in view of Shimizu (4,817,177).

Regarding claim 4, Suzuki discloses tracking every work board during each manufacturing process (Para. 0005). Uchida, Chahal, Bonewitz, and Suzuki do not recognize assigning every work board a transmission channel for sequentially transmitting periodically varying images, assembling the image data into a transmission packet, and transmitting the transmission packet. However, Shimizu teaches that it is known to provide separate transmission channels (Figure 1) and to assemble image data into a transmission packet and transmit the transmission packet (Col. 3, lines 28-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the transmission of image

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data disclosed by Uchida, Chahal, Bonewitz, and Suzuki to include providing separate transmission channels and assembling the data into a transmission packet as taught by Shimizu because it allows for high-speed transmission (Col. 3, lines 45-49).

Response to Arguments

6. Applicant's arguments filed 1/12/04 have been fully considered but they are not persuasive.

Summary of Applicant's Argument: Uchida uses a speedometer to detect board speed, and thereby is not concerned with variation in the time period experienced by a board during a plurality of manufacturing processes. Uchida performs scanning based on instantaneously measured velocity value. Bonewitz is unrelated to the field of building board manufacturing and the detection of flaws during manufacturing. The system of Michael is not properly combinable with a system that also incorporates correction for varying velocities. Suzuki does not disclose recording data measurement times. Instead, Suzuki discloses that it is possible to record data collection times.

Examiner's Response: Uchida discloses a velocity measuring means to measure the velocity of a board on a production line (Page 2, para. 0012). The measured velocity is used to control the line sensor (Page 2, para. 0012). The teachings of Bonewitz are cited for well-known manufacturing inspection. The claim limitations concerning board manufacturing are taught by the primary art of record. The teachings of Michael are cited for well-known image processing recited in dependent claims. Suzuki discloses a time-measuring apparatus (Para. 0019).

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Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072.

The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



VK
2/20/04

MEHRDAD DASTOURI
PRIMARY EXAMINER

